14

data, such as, for example, non-directed data, which may or may not be time-varying. Further, the scale 612 of tool 610 could be divided into any number of segments, each having a different color. Also, the displayed links, or partial lines, could vary in thickness based on the data values associated with their respective nodes.

We claim:

1. A dynamic graphics arrangement for use in a computer having a display comprising

means for displaying on said display a plurality of nodes, said nodes being grouped into respective pairs of nodes based on a predetermined criterion associating the nodes in each pair with one another, at least one of said pairs comprising first and second nodes,

means for displaying on said display at least one vector having exterior end points respectively connected to said first and second nodes, said at least one vector being formed from at least two displayed segments indicative of said criterion, said segments being substantially in contact with one another at their interior end points, and

means for allowing a user of said arrangement, using any one of a plurality of associated adjustable parameters displayed on said display, to dynamically adjust the lengths of said at least two segments in order to separate said segments from one another at their interior end points and to dynamically increase said separation.

2. A dynamic graphics arrangement for use in a computer having a display comprising

means responsive to a request inputted by a user of said computer for displaying on said display a plurality of nodes grouped into at least respective pairs of nodes based on a common, predetermined relationship that the nodes in each of said pairs have with one another,

means for displaying on said display a plurality of continuous lines respectively disposed between the nodes forming respective ones of said pairs of nodes, each of said lines being formed from at least two segments, each of said segments being indicative of a level quantifying the common, predetermined relationship that its associated node has with the other one of said nodes forming a respective one of said pairs of nodes, and

means for displaying on said display a plurality of adjustable parameters each operative by said user for dynamically adjusting the lengths of individual ones of said line segments in order to separate such line segments from one another at their interior end points.

3. The arrangement set forth in claim 2 wherein one of said displayed parameters is a size tool operative by said user for dynamically controlling the lengths of said displayed segments beginning at their interior end points.

4. The arrangement set forth in claim 2 wherein said

60 common, predetermined relationship is a predetermined class of data, and wherein each of said segments is indicative of the level of said predetermined class of data that its associated node is outputting to the other node in a respective one of said pairs of nodes, wherein one of

65 said displayed parameters is a data threshold tool settable by said user for controlling the display of said segments, and wherein said arrangement further comprises means responsive to said user setting said data threshold

15

tool to a respective range of data thresholds for effectively erasing from said display those line segments representing respective levels of data not within the range established by said user.

5. The arrangement set forth in claim 4 wherein another of said displayed parameters is a tool operative by said user when at least one of the segments forming one of said links has been effectively erased from said display for extending the interior end point of the remaining one of the segments to the node associated with the erased one of the segments.

6. The arrangement set forth in claim 4 wherein each of said nodes has a respective identity and wherein said means for displaying said links includes means operative when said user points to one of said nodes so as to mark that node as being an anchor node for displaying the identity of said anchor node as well as the levels of data associated with said anchor node.

7. The arrangement set forth in claim 6 wherein said means for displaying said links further includes means operative when said user points to another one of said nodes so as to mark that node as being a current node for displaying with the identity of said anchor node the identity of said current node as well as the levels of data indicative of said common, predetermined relationship between said anchor and current nodes.

8. The arrangement set forth in claim 2 further comprising means for displaying on said display a tool operative by said user for controlling the magnification of a particular area of said display.

9. The arrangement set forth in claim 2 further comprising means for displaying on said display a plurality of tools including a tool operative by said user for deactivating one of said displayed nodes when said user points to that node, for displaying on said display a symbol representing said deactivated one of said nodes and for erasing from said display the links associated with that node.

10. The arrangement set forth in claim 8 wherein each of said nodes has a respective identity and wherein said plurality of tools further includes a tool operative by said user for reactivating said deactivated node and for displaying on said display the identity of that node.

11. The arrangement set forth claim 2 further comprising means for displaying on said display a plurality of tools including a tool operative by said user for deactivating all of said displayed nodes.

12. The arrangement set forth in claim 10 further comprising means responsive to user deactivating said displayed nodes for displaying on said display a plurality of symbols representing respective ones of said deactivated nodes and for effectively erasing from said display said links.

13. The arrangement set forth in claim 11 wherein each of said nodes has a respective identity and wherein said plurality of tools further includes a tool operative by said user for reactivating at least one of said nodes when said user points to its respective displayed symbol and for displaying on said display the identity of said

reactivated node and its associated links. 60

14. A dynamic graphics arrangement for use in a computer having a display comprising

 means responsive to a request inputted by a user of said computer for displaying on said display a plurality of nodes representing respective sources of 65 data, said sources of data having a spaced-apart relationship with one another, said nodes being grouped into respective pairs of nodes based on a

16

predetermined data criterion associating the nodes in each pair of said nodes with one another and for displaying a plurality of continuous lines respec-
tively disposed between the nodes forming respec-
5 tive ones of said pairs of nodes; each of said lines being formed from half lines quantifying said data criterion associated with their respective nodes, and

means for displaying on said display a threshold tool
10 operative by said user for controlling the display of individual ones of said lines such that said user may effectively erase from said those of said half lines representing respective data values which are not within a threshold established by said user operat-
15 ing said threshold tool.

15. The arrangement set forth in claim 14 wherein each of said links is formed from two associated seg-
ments having interior end points meeting one another and having an exterior end point extending to a respec-
20 tive one of the nodes forming a respective pair of nodes.

16. The arrangement set forth in claim 15 wherein said means for displaying said tool includes means for displaying another tool operative by said user for changing the length of each of said displayed segments
25 such that each of said two associated segments are sepa-
rated from one another in accordance with a ratio estab-
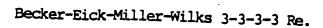lished by said user operating said other tool.

17. The arrangement set forth in claim 15 wherein said arrangement further comprises means for display-
30 ing another tool operative by said user when at least one of the segments forming a respective one of said links has been effectively erased from said display for extend-
ing the interior end point of the remaining segment to the node associated with the erased segment.

35 18. The arrangement set forth in claim 14 wherein said means for displaying said tool includes means for displaying another tool operative by said user for con-
trolling the magnification of a desired area of said dis-
play.

40 19. The arrangement set forth in claim 14 wherein said means for displaying said tool includes means for displaying another tool operative by said user for deac-
tivating one of said displayed nodes when said user points to that node, for displaying on said display a
45 predetermined symbol in place of said one of said nodes and for erasing from said display the links associated with that node.

20. The arrangement set forth in claim 19, wherein each of said nodes has a respective identity and wherein
50 said means for displaying said tool further includes means for displaying still another tool operative by said user for reactivating said deactivated one of said nodes when said user points to its deactivated symbol and for displaying the identity of the reactivated one of said
55 nodes as well as said quantified data criterion associated with that node.

21. The arrangement set forth in claim 14 wherein said means for displaying said tool includes means for displaying another tool operative by said user for deac-
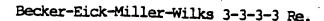
60 tivating all of said displayed nodes.

22. The arrangement set forth in claim 21 further comprising means responsive to said user deactivating said displayed nodes for displaying on said display a plurality of other symbols representing respective ones 65 of said deactivated nodes.

23. The arrangement set forth in claim 22 wherein each of said nodes has a respective identity and wherein said arrangement further comprises means for display-

17

ing still another tool operative by said user for reactivating at least one of said deactivated nodes when said user points to its respective displayed deactivated symbol, for displaying on said display the identity of the respective source of data represented by the reactivated node and for displaying the respective one of said links associated with the reactivated node.

24. The arrangement set forth in claim 14 wherein each of said nodes has a respective identity and wherein said means for displaying said links includes means operative when said user points to one of said nodes and marks that node as being an anchor node for at least displaying on said display the identity of said anchor node and said quantified data criterion associated with that node.

25. The arrangement set forth in claim 24 wherein said means for displaying said links further includes means operative when said user points to another one of said nodes so as to mark that node as being a current node for displaying with the identity of said anchor node the identity of said current node as well as said quantified data criterion associated with said anchor and current nodes.

26. A method of mapping on a display associated with a computer data associated with a plurality of nodes, said method comprising the steps of

responding to a request inputted by a user of said computer by displaying on said display a plurality of nodes grouped into at least respective pairs of nodes based on a common, predetermined relationship between the nodes in each of said pairs,

displaying on said display a plurality of lines disposed between the nodes forming respective ones of said pairs, each of said lines being formed from at least two segments having interior end points substantially in contact with one another, said segments being indicative of a level of data quantifying the common, predetermined relationship that its associated one of said nodes has with the other one of said nodes forming a respective one of said pairs of nodes, and

displaying on said display a number of adjustable parameters each operative by a user of said computer to dynamically separate the interior end points of individual ones of said segments by a distance determined as a function of said user adjusting a selected one of said displayed parameters.

27. The method set forth in claim 26 wherein said step of displaying said parameters includes the step of displaying as one of said displayed parameters a data threshold tool settable by said user for controlling the display of said segments, and wherein said method includes the step of

responding to said user setting said data threshold tool to a respective range of data thresholds by effectively erasing from said display those of said displayed segments representing data levels not within said range.

18

28. The method set forth in claim 26 wherein one of said displayed parameters is a size tool settable by said user for controlling the display of said segments, and wherein said method includes the step of

5 responding to said user setting said size tool to a respective value by adjusting the length of each of said segments as a function of said value.

29. The method set forth in claim 26 wherein each of said nodes has a respective identity and wherein said 10 step of displaying said links includes the step of responding when said user points to one of said nodes and marks that node as being an anchor node by at least displaying on said display the identity of said anchor node and said level of quantified data associated with 15 that node.

30. The method set forth in claim 29 wherein said step of displaying said links further includes the step of responding when said user points to another one of said nodes so as to mark that node as being a current node by 20 displaying with the identity of said anchor node the identity of said current node as well as said level of quantified data indicative of said common, predetermined relationship between said anchor and current nodes.

25 31. A dynamic graphics arrangement for use in a computer having a display comprising

 . means for displaying on said display a plurality of nodes, said nodes being grouped into respective pairs of nodes based on a predetermined criterion 30 associating the nodes in each pair with one another, at least one of said pairs comprising first and second nodes,

 means for displaying on said display at least one vector disposed between said first and second nodes, 35 said one vector being formed from at least two colinear segments, and

 means for allowing a user of said arrangement, using any one of a plurality of associated adjustable parameters displayed on said display, to dynamically 40 separate said at least two segments from one another beginning at their interior end points and to dynamically increase such separation.

32. A method of dynamically arranging graphics on a computer having a display comprising the steps of

45 displaying on said display a plurality of nodes, said nodes being grouped into respective pairs of nodes based on a predetermined criterion associating the nodes in each pair with one another, at least one of said pairs comprising first and second nodes,

50 displaying on said display at least one vector disposed between said first and second nodes, said one vector being formed from at least two colinear segments and

 allowing a user of said arrangement, using any one of 55 a plurality of associated adjustable parameters displayed on said display, to dynamically separate said at least two segments from one another beginning at their interior end points and to dynamically increase such separation.

60   • • • • •

33. A method of displaying graphics on a computer having a display comprising the steps of

displaying on said display a plurality of symbols grouped into pairs of symbols based on a predetermined relationship between the symbols forming a respective pair,

displaying a line between the symbols forming each of said pairs of symbols to represent the predetermined relationship between those symbols, and

varying the thickness of said line as the predetermined relationship between the symbols of each of said pairs of symbols varies.

34. A method of displaying graphics on a computer having a display comprising the steps of

responsive to a request entered by a user for displaying on said display at least two symbols having a predetermined relationship with one another and being respective sources of data, and

displaying on said display a line between said at least two symbols and varying the thickness of said line to reflect a corresponding change in said predetermined relationship.

35. The arrangement set forth in claim 14 wherein said displayed threshold tool includes first and second slider bars operative by said user for establishing first and second thresholds defining a range of thresholds such that those of said half lines associated with data values that are not within said range are erased from said display.

36. A dynamic graphics arrangement for use in a computer having a display comprising

means for displaying on said display a plurality of symbols representing respective data values, and

means for displaying on said display a threshold tool having first and second slider bars operative by a user of said computer for establishing first and second thresholds defining a range of data thresholds to control the display of said symbols.

37. The arrangement of claim 36 wherein said control includes erasing those symbols associated with data values not within said range from said display.

38. A dynamic graphics arrangement for use in a computer having a display comprising

   means for displaying on said display a plurality of symbols representing respective data values,

5   means for displaying on said display at least one tool operative by a user of said computer to restrict the display to only those of said symbols which meet a data criteria established by said user interacting with said displayed tool, and

   means, responsive to said user interacting with said displayed tool, for dynamically updating said display so that only those of said symbols representing

10 data values meeting the data criteria currently established as a result of said user interacting with said displayed tool.